1:Vaillant A-5 (1928-1936)1941 NU7 Aztec NU7

tions. The original inventors and innovators are lost in the black obscurity of American history, but the fruit of their ingenuity plays an important part in our modern economy.

As opposed to this wealth of plants, the Aztecs were poor in domesticated animals. They had several varieties of dog, one of which was bred for food, but they never used this animal for transport as did Indians of our Northern plains. The turkey was their chief domesticated fowl, although there is some evidence that they bred geese, ducks and quail also. In plantations of the nopal cactus they carefully tended the cochineal bug for the rich crimson dye it yielded when crushed. A second insect, the maguey slug, still retains its place as a delicacy of the Mexican table, served with another typically Aztec dish, *guacamole*,* a thick mixture of tomato, alligator pear and chile.

Hunting, when possible, produced food, but as early as Upper Middle Culture times the deer were nearly all killed off. The seasonal migrations of the birds, which still visit the lakes of Mexico, offered a profusion of geese, ducks and other wild fowl. Small fish, netted or speared with a trident, were sometimes consumed, and the eggs which a certain fly lays on the lakes were made into a paste still eaten in Mexican communities. The high functionaries, since they were supported by the community, kept a much better table than the poor, who lived meagerly off the produce of their own fields; the daily repast of Montezuma was described by the Spanish conquerors as the height of Lucullan luxury.[12]

Tools showed relatively little variation from Middle Culture to Aztec times. The *coa*, or digging stick, was the chief farming instrument, and the *metate* and *mano* even now re-

*Wah-ca-mo'-lay.

10:Deevey N-4 (no date)1957 NU7 Aztec NU7

Sahagún, it does not follow that Aztec limnology was exclusively motivated by exploitation. Scientific curiosity in the modern sense was not a dominant quality of 16th-century Spain, and the stress on practical matters is at least as likely to be a property of the Spanish as of the Aztec mind. Moreover, as Maldonado-Koerdell (1946) points out, an essential basis of Aztec interest in natural history, at least in vertebrates and plants, was magical and totemic. 127

FAUNA. It is characteristic, and exasperating, to find that Sahagún's Chapter 12 "De las diversidades de las aguas" discusses the sea, the rivers, and the springs, and omits the lakes. A much more impressive amount of limnologic information is given in Chapter 2, with its list of 41 aquatic birds, practically all of which can be identified (Martin del Campo, 1940). Nahuatl names and brief descriptions are given, but what is more important is that food habits are listed for nearly every species, and that most of them are illustrated. Chapter 3 deals with aquatic animals, including crustaceans, turtles, amphibians (including the axolotl), the marine iguana, and a disappointingly short list of fishes. Crocodiles are separated off with several mythical water creatures in Chapter 4, "De otras animales del agua que no son comestibles". Since Sahagún wrote in the century of Gesner, we need not be surprised to find a certain amount of credulity displayed; the account of the *yacapitzauac* or *nacatzone*, a bird (the eared grebe, *Colymbos nigricollis californicus*) that subsists on its own feathers, is particularly enchanting. 127 136

Fishing on Lake Texcoco is probably not what it was before the Valley lakes were finally lowered in 1900, but statements that the salt lake is lacking in fishes are erroneous. At the time of the Conquest, the Anonymous Conqueror remarked "in the sweet water there are some small fish; in the salt part they are still smaller" (1917 edition, p. 59). Cortés, on the other hand, tells us that the fisheating birds in Montezuma's menagerie were fed daily on two hundred and fifty pounds of fish, caught in the salt lakes (MacNutt edition, 1908, vol. 1, p. 266). The two statements do not conflict, since small but numerous members of the families Atheriniidae and Goodeidae were doubless the staples of the fishery. The aboriginal methods of fishing may be seen within a few miles of Mexico City today, as Linné shows (1937, 1948). All are illustrated in the Florentine Codex, i.e. the work of Sahagún, and in the fascinating pictures that decorate the mid-16th-century map "attributed to Alonso de Santa Cruz", now in the library of the University of Uppsala. This map serves as the focal point of Linné's remarkable book (1948), which synthesizes archaeologic, historic, and ethnographic knowledge into a convincing picture of the Valley of Mexico in 1550. 127 136 226

The fishing methods include rod-and-line, nets of two of three sorts, 226

10:Deevey N-4 (no date)1957 NU7 Aztec NU7

and spearing. It is not certain that the rod-and-line method involved fishhooks, for these are not known archaeologically from the Valley, but the line may have carried a gorge instead of a hook, and in any case *golden* fishhooks were found in use in 1518 by Grijalva on the island of Cozumel. The types of nets used are the gill net, the pole net, and possibly the throw-net; the latter was used for rabbits but may not have been used for fish. Spearing is of particular interest to ethnologists, because Mexico is one of the few places in the world where the atlatl is still in use. This fact was discovered on Lake Pátzcuaro by Seler in 1892 and on Texcoco by Beyer in 1925.

Water birds are mainly hunted in the fall and winter, when migrants swell their numbers. On Pátzcuaro the Tarascans surround them with canoes and kill them with tridentiform atlatls, as described by León (1934) and Foster (1948), but in the shallower lakes of the Valley the birds are caught in long nets stretched just above the water. This practice is fully depicted in the two 16th-century pictorial sources, and survives today (Linné, 1940).

Exploitation of the Valley lakes for animal food was not restricted to fishing and fowling. If it had been, we should have no reason to impute any special limnologic knowledge to the Aztecs, but the use they made of their lacustrine environment goes far beyond that of the usual "primitive" society. In addition to tadpoles and frogs, and the axolotl, of which Sahagún says "es muy bueno de comer; es comida de los señores", the historian lists a number of invertebrate foods in Chapter 3. These items of diet have bewildered most subsequent writers, and without a thorough ethnographic survey it is impossible to be sure that the following remarks are not compounding the confusion. However, there are certain points that a limnologist finds obvious and that have been missed by all the authorities. In discussing the invertebrates we rely not only on Sahagún and the relevant illustrations in Plate I, but on Hernandez' *Historiae animalium et mineralium Novae Hispaniae liber unicus*, written in the 1570's and appended to the 1651 Rome edition of the great work on Mexican medical botany.[2]

[2] Mrs. Emmart, in her edition of the de la Cruz-Badianus herbal (1940), remarked that the five copies of Hernandez' work that she was able to collate are all of different editions, though all bear the year 1651. Presumably these all have the title *Rerum medicarum Novae Hispaniae Thesaurus*, but the copy in the Yale University Library, also imprinted 1651, is entitled *Nova plantarum, animalium et mineralium Mexicanorum Historia*. In any case this is a very incomplete version of what must be the greatest work on Mexican natural history ever written. Hernandez' Latin work ran to 15 or 17 volumes, and is believed to have been destroyed in the fire at the Escorial in 1671. George Kubler informs me, however, that a Nahuatl translation was made by 1576, and this or a copy of the original may yet come to light.

11:Diaz T,H-5 (1519-1520) 1910
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and crowned with a strong wall of rubble masonry, and was protected on both sides by a strong stockade which broke the force of the waves.

"The dyke divided the lake into two parts, the larger to the East was known as the Lake of Texcoco, from the city situated on its shores, the lesser to the West was called the Lake of Mexico because the capital was surrounded by its waters on all sides. From this arrangement Mexico derived an aggregate of inestimable benefits. The great lake, like all lakes having no outlet for their waters, was salt, notwithstanding the volume of all the rivers which flowed into it, or in fact it owed its saltness to this very flow which carried in its current the soluble salts which the falling rain has robbed from the land. The salt water saturating the soil has little by little rendered it sterile, and in addition, the carbonate of soda and the thousand other impurities with which it is charged are hostile to animal life to such an extent that fishes could not live in it, neither to-day nor at the time of the Conquest, as was stated by the writers at that epoch, although the water was then less salt than it is at the present. As the lakes of fresh water to the south poured their surplus water into the lake of Mexico through the narrows of Culhuacan and Mexicaltzingo, those waters spread through the western lake, the Lake of Mexico, and completely filled it, separated as it was from the salt lake by the dyke of Netzahualcoyotl. In this way the basin of fresh water was converted into a fish pond and a home for all sorts of aquatic fowl. Chinampas covered its surface, separated by limpid spaces which were furrowed by swift canoes, and all the suburbs of this enchanting capital became flowery orchards."[1]

It will be noticed in the Upsala map that within the dyke men are depicted catching fish, while no fishermen are shown in the Lake of Texcoco, which was, however, then, as it is now, the home of numberless wild fowl. The great dyke was provided with numerous openings for the passage of canoes, but these openings were furnished with sluice gates which could be closed during the rainy season when the water of Texcoco rose and threatened to flood the City, and could be opened again to let out the fresh water from Mexico when the rapid evaporation during the summer months had lowered the level of Texcoco.

The fluctuations of level in the lakes of Chalco and Xochimilco were probably always less than in Lake Texcoco owing to the great number of copious springs of beautifully clear water which well up around their margins, especially on the west side, as well as in the lake of Xochimilco itself.

[1] Francisco de Garay, *El valle de Mexico, apuntes historicos sobre su hidrographia*, pp. 13 & 14.

15:Bandelier E-4 (no date)1880 NU7 Aztec NU7

114 that all the tribes of Mexico, issuing from a common stock,
174 speaking the "Nahuatl" tongue, and living under the same geographical influences,[17] had reached an almost identical state of culture. Therefore the result of our investigations of the landed tenure among the Mexican tribe proper, can safely be assumed as applicable to all the other sedentary tribes of (the valley of) Mexico.[18]

174 While thus horticultural tribes had secured the fertile portions of that valley, dividing its expanse among themselves, and separated by unoccupied "neutral" soil,[19]—a small band of their own linguistical relationship was moving down from the North, and ultimately made its appearance in their midst. Those were the *Mexicans* proper, also called "*Aztecas Mexitin*," "*Aztlantlacas*" or "*Mexica*."[20] This band was composed of Seven Kinships "lineages," whose chiefs jointly composed the government of the whole, a head war-chief, elected for life, directed their movements, but

[17] The difference between the valley tribes and those of the Tlaxcaltecan mountain country, is not even very great. It is in fact but apparent. From the nature of the soil, the kinships of Tlaxcallan were more scattered in location, and therefore were apparently democratic. The same was the case among the Niquirans of Nicaragua. See Oviedo (Lib. XLII, cap. I, pp. 37 and 38), and E. G. Squier. ("Nicaragua," Vol. II. "Aborigines of Nicaragua," cap. II, p. 340–348).

[648] [18] Otherwise the confederacy, on equal terms, existing between the valley-tribes for more than a century previous to the conquest, and of which we shall hereafter treat, could not have been formed, neither could it have subsisted. The fact, however, that all the old chroniclers mention the tribes of Mexico under one common head, and describe their customs, as, in the main, identical.—proves that we can safely assume the Mexicans as typical in that respect. Some tribes were more advanced in certain mechanical arts than others,—but the difference was merely one of details, and not of organic principles.

[131] [19] See "Art of War," p. 135. The boundary line mentioned by Ixtlilxochitl (Histoire des Chichimèques," cap. XXXIII, p. 125), and also by Veytia (Cap. III of Book III. p. 167 of 3rd volume) if, as the latter asserts, it ever really existed, did not divide so much the territory of the tribes, but rather the range over which each one might freely extend, after the formation of the confederacy. Sr. Veytia contends that the remnants of it were still visible at his time, and carried the name "albarrada de los indios."

[226] [20] "Art of War," p. 96, note 1. We have alluded to the common appellation of "Chichimecas." Sahagun (Lib. X, cap. XXIX, p. 147), says: "properly they call themselves Atlacachichimeca, or fishermen that have come from distant lands." This would be a corroboration, to some extent, of Torquemada's assertion (Lib. II, cap. XI, pp. 92 and 93) that the Mexicans introduced the art of fishing in the Mexican valley. We cannot help being struck by the prefixum, "Atlaca." If it decomposes into "Atl," water, and "tlacatl," man, it assigns to the Mexicans an original abode in the neighborhood of the sea, or of very large water-courses. Tezozomoc, in his first chapter, speaking of Aztlan, whence the Mexicans are said to have emigrated, and from which word the name of "Aztecs" is derived, says: "They had in this land and the *lagunes* thereof . . . ." (p. 5). Aztlan itself means "place of the heron," which is an aquatic bird. (See also Veytia, Lib. II, cap. XII, p. 91). He places "Aztlan" towards the extreme north.